

**July 2002**

*This edition of the Significant Events Report includes profiles of summer students and interns in the Division this summer, a news story on the R&D 100 Award for the Crystallization Robot, and links to pictures portraying the completion of the Spallation Neutron Source Front-End Injector. Submissions and article suggestions should be directed to <mailto:ser@lbl.gov>.*

## **Division Director's Comments**

Even with people taking vacations there is a lot of activity around the Division. The students are here for the summer, we are in the middle of writing performance reviews, we have just completed writing the Division's five year Strategic Plan, and we're starting to communicate the plan in various forums across the Division.

The new PRD (Performance Review and Development) process is not that much different than what we are all familiar with except for the increased emphasis on development and redesigned forms. Represented employees will be using the same P2R forms and process as last year, because we did not get approval from the unions to use the new forms by the time the review process started.

The Division's strategic plan is now posted on the web at <http://engineering.lbl.gov/director/strategy.htm>. Please take a look and send your comments to me at [jtriplett@lbl.gov](mailto:jtriplett@lbl.gov). I will be coming to various regularly scheduled group meetings to discuss the plan and some of the critical issues that the plan addresses. In addition, we will be setting up other group meetings to ensure that as many people as possible get a chance to hear about the plan.

We have been making progress in the shops in Building 77 and Building 25 to bring in new machines and clean up the space. Three new machines have been installed and are making parts. There are a few more machines on the way that should be installed in the upcoming weeks. As you walk through Building 77, you can see the contrast: you will see areas that are clean and painted, with newer machines and restored workbenches, right next to areas with dirty floors and walls, and older, obsolete machinery. There is still a long way to go to bring it up to the standards we want to live with, but a great amount of progress has been made and the staff in Building 77 is working hard to make the working environment there something to be proud of. In Building 25, the area has been cleaned up, the walls and doors painted, and most of the junk removed. There is a huge contrast in Bob Candelario's electronics shop, between the mess that was there about a year ago and the way it looks today.

In addition to working with our traditional and non-traditional customers inside the lab and expanding our existing Work For Others portfolio, we are working to bring new projects into the Division from outside the lab. We have made progress and are close to having agreements in place with a number of potential customers, including some new

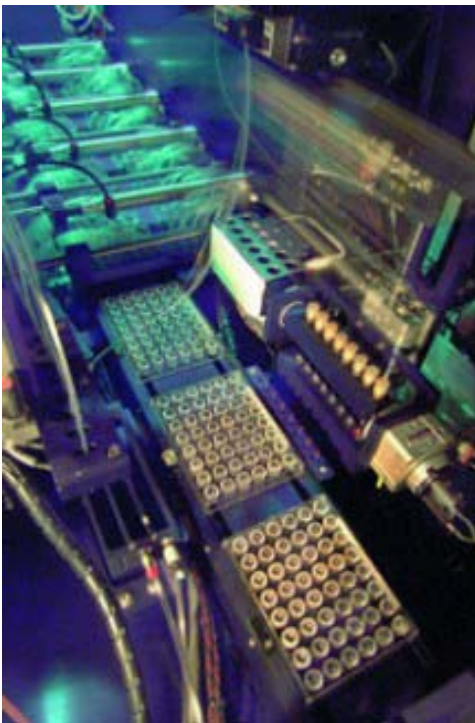


customers such as General Atomics. We are also working out the details for bringing work into the Division from LLNL and other labs.

I encourage you to ask yourself what you can do to help improve the conditions of our working environment. You can volunteer to help on a committee to deal with global issues, clean up your local workspace and office, or simply be more tolerant of other people and try to see things from their perspective before passing judgment. Every little effort helps. We have a long way to go, but we seem to have started to turn the ship. Maybe we can miss the iceberg if everyone chips in and does their part in making this a better place to work.

## News

### *High-Throughput Nanovolume Crystallization Robot Receives R&D 100 Award*



The Crystallization Robot, developed at LBNL with Engineering's Joseph Jaklevic, Derek Yegian, Jian Jin, William Kolbe, Arthur Jones, Earl Cornell, and Robert Nordmeyer, in conjunction with Ray Stevens of the Scripps Research Institute, Peter Schultz of the Genomics Institute of the Novartis Research Foundation, Bernard Santarsiero of the University of Illinois at Chicago, and Syrrx, Inc., has received an R&D 100 award. R&D 100 awards are given by R&D magazine to recognize products and technologies of "demonstrable technological significance." Protein crystallography is a key process in the development of new drugs. The robot automates and vastly accelerates the process, enabling determination of protein structure at a historically unprecedented rate.

More information about R&D 100 awards is available at [www.rdmag.com](http://www.rdmag.com).



## *SNS Project Completed*



SNS Dedication Ceremony

The Spallation Neutron Source (SNS) Front End Injector (FEI) has been completed and shipped to Oak Ridge National Laboratory (ORNL). These efforts would never have been possible without the full support of the Lab's riggers, carpenters, electricians, our shops, and the dedication of the SNS staff both at LBL and Oak Ridge.

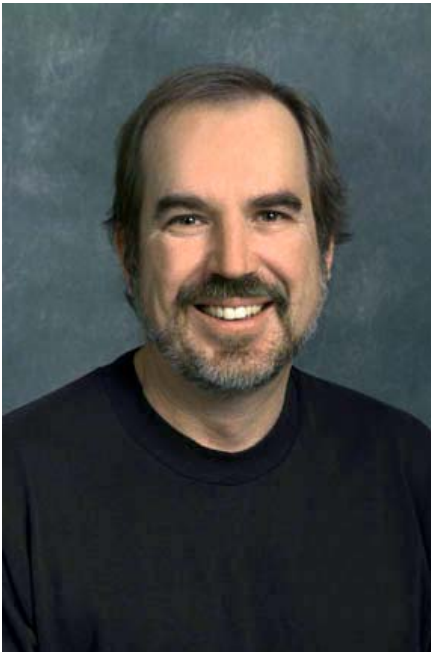
The entire SNS team was rewarded with an Outstanding Performance Award (OPA),

jointly granted by the Engineering and Accelerator & Fusion Research (AFRD) Divisions.

A detailed account of the project completion can be found in the Spallation Neutron Source section below.

## **Profiles**

### *In Memoriam*



Harry Scheid was hired as a Senior Electronics Technician in 1987, and within two years was promoted to an Electronics Engineering Technologist II working with Tom Viola in the Real Times Systems Group (RTSG). Harry was responsible for performing complex corrective and preventive maintenance and installation and upgrades on various computer systems and associated peripheral equipment. Harry was reclassified to an Electronics Engineering Associate in 1998, and was assigned to provide technical coordination support to the Center for X-Ray Optics (CXRO) and the Advanced Light Source (ALS).

Harry served as both President and Vice President of the local UPTE union.

“Harry took me under his wing. As my skill and experience grew under his guidance I was finally



able to take his place as President, he solidly backing me up as Vice President. Looking back over all those years, I cannot recall Harry's ever failing to answer the call of duty or ever ask for anything for himself. The world can never have too many such people."

*-Doug Owen, UPTE*

"What I'll remember most about Harry is his wry wit. We used to work the midnight to 8AM shift together. It's unusual to be in a happy laughing mood at 4:30 AM, but we managed." *-Dave Busby, Information Technology & Services Department*

Harry served three years in the Air Force and remained a member of the Air Force Reserves until his death on May 17, 2002. For those who wish to make a donation on Harry's behalf, please contact the Air Force Memorial Foundation, P.O. Box 97026, Washington, DC 97026

### *Service Recognition*

*- Pamala Williams-Perkins*

	April	May	June
25 Years	RP Singh		George Souza Stephen Lewis
20 Years	John Moreau		Charles Kemp
15 Years	Nicholas Palaio	Peter Cull	
5 Years			Ron Beggs William Bates

### *Retirees*

*- Pamala Williams-Perkins*

James Greer - 6/02

Joseph Jaklevic - 4/02

Ron Yourd - 5/02

## *New Career Employees*

– Rita McLean



Daniel Ellis joined the Mechanical Engineering Department in June. He was most recently employed at Lavenir Technology in Pleasant Hill. He has many years of experience as an engineering technician including an assignment at the ALS in the early 90's as a mechanical technologist. Daniel's father, Russ, had a long career at the Lab, working in the old Building 6 accelerator. Daniel is now assigned to the new generation accelerator also constructed in Building 6, working with Dan Colomb.



Vincent Hunley joined the CAD (Computer Aided Drafting) Group in May. He was most recently employed at ETEC Systems, Inc. in Hayward. Vincent has many years of experience as a network systems administrator and help desk manager. Since joining the lab, he has been working with Dan Pulsifer to help users solve system problems.



Steven Wilson joined the Software Group at the Joint Genome Institute (JGI) in Walnut Creek this month. Steven was most recently employed at Exelixis, Inc. in South San Francisco. Steven's experience has included working with researchers in a sequencing laboratory and developing a web site for the group. He is a recent graduate of the University of California at Berkeley with a degree in Bioengineering. Since joining Berkeley Lab, he has been supporting the JGI DNA sequencing production line by programming and maintaining the robotic instrumentation used for sample processing. Steven is working under the direction of Marty Pollard.

## Significant Events

### Student/Internship Committee

– Bill Edwards

#### *Student Hires*

– Karen Paris

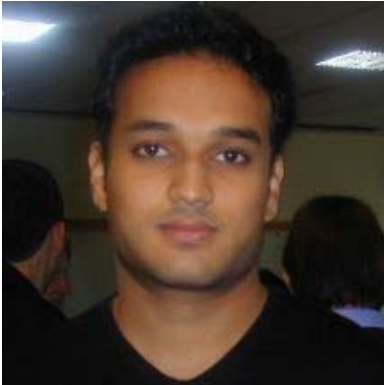
The Engineering Division held its 2nd Annual Intern/Student Luncheon on Friday, June 21st in Perseverance Hall. The luncheon is a way for Division members to get together to welcome new interns and students.

The Student/Internship Committee would like to thank all attendees and asks that you join us in welcoming the following students and interns to the Lab:





Lawrence Berkeley National Laboratory  
Engineering Division  
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**Anmol Das**  
Mechanical Engineering  
UC Berkeley  
Working with Neal Hartman  
on the ATLAS project.



**LaMont Duke**  
Computer Engineering  
San Jose State University  
Working with Evergreen  
Valley College's Professor  
Yu and Murat Karaca to  
perform a finite-element  
analysis of the response of a  
Berkeley apartment building  
to seismic loads.



**Julian Feignon**  
M.S. Engineering, Industrial  
Systems  
Université Blaise Pascal in  
Clermont-Ferrand, France  
Working with Emanuelle  
Mandelli on the 3DX project.



**Fai Jor**  
Evergreen Valley College  
Working with Evergreen's  
Professor Yu and Murat  
Karaca to perform a finite-  
element analysis of the  
response of a Berkeley  
apartment building to seismic  
loads.



**Karen Lee**  
Electrical Engineering and  
Computer Science  
UC Berkeley  
Working with Jean-Marie  
Bussat on chip design for the  
ALS.



**Michael McGrath**  
Mechanical Engineering  
UC Berkeley  
Working with Seno Rekawa  
on various designs for  
CXRO.



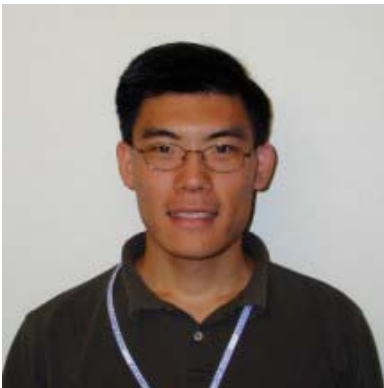
**Matthew Nielsen**  
B.S. Physics  
Ripon College  
Working with Erick Herrarte  
and Bart Davis on developing  
wireless sensor networks.



**Zachary Oberman**  
B.S. Electrical Engineering  
and Computer Science  
UC Berkeley  
Working with Mike Chin in  
the ALS.



**Daniel O'Keeffe**  
Mechanical Engineering  
California Polytechnic State  
University  
Working with Will Thur to  
design a position-measuring  
device actuated by a laser  
diode used to locate beamline  
offsets.



**Stacius Sakato**  
Computer Science and  
Engineering  
UC Davis  
Working with Calvin Guinn  
to develop a web-based data-  
management system.



**Shamim Samadi**  
Electrical Engineering  
UC Davis  
Working with Jonah Weber  
to develop in-situ calibration  
of the control system IP  
Modules for the ALS.



**Louis-Philippe Semeteys-  
Ladouceur**  
Geophysics  
UC Berkeley  
Working with Murat Karaca  
to analyze geophysical data  
collected at an open-pit  
copper mine.





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**Mark Triplett**  
Computer Engineering  
Los Positas College  
Working with Calvin Guinn  
on converting LHC designs  
and posting them to the  
CERN website.



**Professor John Yu**  
Evergreen Valley College  
Ph.D. Geotechnical  
Engineering  
Working with Murat Karaca  
and two of his students,  
LaMont Dukes and Fai Jor to  
build a finite element analysis  
of a Berkeley apartment  
building.

*New Interns*  
– Rita McLean



**Alexis Smith**  
M.S. in Mechanical  
Engineering  
M.I.T.  
Working on ATLAS with  
Eric Anderssen and Neal  
Hartman.



**Seung-Kil Son**  
Ph.D. in Mechanical  
Engineering  
M.I.T.  
Working on the Meso-Scale  
Machining Initiative in  
DesignWorks.

## Communications

– Deb Hopkins

### Website

– Paul Harris

Page hit information is now available online at: <http://engineering.lbl.gov/webtracking/>.

## Quick Tips



### Quick Tips

– Erick Herrarte, Daniel Pulsifer

#### Locking Your Workstation (Windows 2000 and XP)

If you want to quickly lock your workstation, create a shortcut:

1) Right-click on the desktop, point to "New," and then click "Shortcut."

2) In the dialog box labeled "Type the location of the item" type:  
`c:\winnt\system32\rundll32.exe user32.dll,LockWorkStation`

IMPORTANT: Notice the CAP formatting in LockWorkStation. This shortcut will NOT work if you forget to capitalize the "L," "W," or "S."

3) Enter a name for the shortcut.

4) Click "Finish."

You can also change the shortcut's icon:

1) Right-click on the shortcut.

2) Click "Change Icon."

3) Click "Browse," and browse for the file `C:\winnt\system32\SHELL32.DLL`.

4) Choose an icon and click on it.

5) Click "Ok."

6) Click "Apply;" then, click "Ok."

You can now drag the shortcut anywhere you want for easy access. Place it on the Start Menu, or the QuickLaunch on the taskbar.



## **Personalized Menus (Windows 98, ME, 2000 and XP)**

This feature keeps the menu selections that you use most often at the top of the menu. If "Personalized Menus" is turned on, you will notice after a few days that your Start/Programs drop-down menu displays only the few listings that you use most often. At the bottom of your menu you will see little "down" arrows. If you click on the arrows, the rest of your programs appear; Windows is displaying only your recent menu selections and hiding the rest.

If you don't like "Personalized Menus" and want to disable this feature, follow these steps:

- 1) go to the StartMenu;
- 2) select "Settings;"
- 3) select "Taskbar and Start Menu;"
- 4) on the "General" tab, clear the box "Use Personalized Menus."

## **Internet Explorer Tip (Any version of Windows)**

To view web pages with as much screen size as possible, press F11 from inside Internet Explorer; this allows you to view pages as full screen. When you are done, press F11 again to bring back the standard window size.

*Forward questions, tips, or suggestions to [guru@lbl.gov](mailto:guru@lbl.gov).*

## **Environmental Safety & Health**

*– Weyland Wong*

### **Accomplishments**

The "safety measurement year" closed on June 30<sup>th</sup>. Accomplishments during the previous year include:

- An excellent Job Hazards Questionnaire (JHQ) completion rate that hovered around 99 percent.
- A training completion rate of about 96 percent.
- Greater safety awareness evidenced by an increase in safety-related questions and issues raised.

- Engineering's Integrated Safety Management (ISM) Plan was updated and is posted at: <http://engineering.lbl.gov/esh/documents/ism.pdf>. The ISM includes identification of potential hazards and risks, procedures to minimize risk, a description of safe work practices and accountability, and a procedure for incorporating employee suggestions. Engineering's safety-performance indicators are posted in several locations including Buildings 25, 46A, and 77.

## **Goals**

- Reduce injuries by making safety a valued and routine practice.
- Improve identification and remediation of job hazards.
- Increase awareness and reduced occurrence of safety deficiencies commonly uncovered during formal and informal safety assessments.

## **Planned Actions**

Asking everyone to take responsibility for themselves, coworkers, the public, and the environment. Specifically:

- Examine and maintain your work space.
- Update your JHQ with your supervisor. The online form has been updated and some questions have been modified.
- Complete training (required training and expiration dates are listed on your training profile).

Communicate all injuries and unsafe conditions to your supervisor immediately. If you need safety recommendations or advice please contact Weyland Wong.

## DesignWorks

– Ken Chow

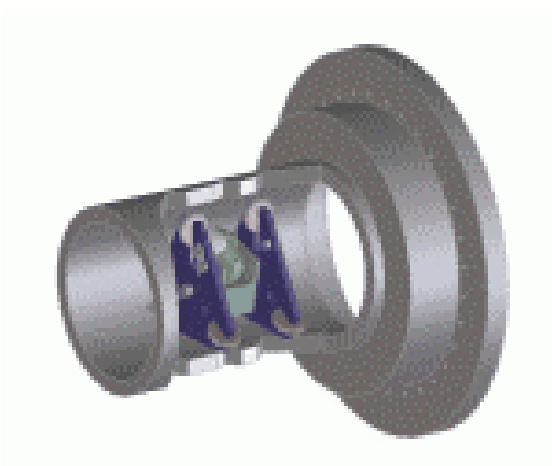
### Accomplishments



Animated Image of SNAP  
Conceptual Scale Model

- Lab Director, Charles Shank, and Director of Operations, Sally Benson, visited DesignWorks in June. We demonstrated several of our current projects, showed off the two Rapid Prototyping machines, and showed how our sweat equity turned storage space in the old glass shop into a modern design engineering office.
- We completed a 1/16-scale conceptual model of the SuperNova Acceleration Probe (SNAP) satellite. The model was built using parts created using the Fused Deposition Modeler (FDM) and the Stereolithography Apparatus (SLA). All major components of the satellite were captured in the model, including the telescope, deck, frame, optical bench, primary mirror, secondary mirror assembly, and baffles. The model will be displayed at exhibit halls around the Lab as well as at LBNL's Open House this fall.
- The Dosimeter Badge modification project is now in final production run. The design for attaching neutron film pieces to existing dosimeter badges has successfully passed sample and pilot testing. The final product has not only minimized the per-badge cost for holding neutron films, but also substantially reduced the film handling and processing effort. The final design makes attaching and removing the neutron film almost as easy as using Post-It notes.
- We completed the Multicell Core Sensor project. A semi-autonomous robot enables measurement of all accelerator cores in a cell block without any disassembly. The unit is computer controlled through a very simple graphical user interface, and uses air actuation to avoid measurement perturbations with the magnetic distance sensor.





CAD model of Multicell Core Sensor in a Beam Tube



Photo of Finished Multicell Core Sensor

- Steve Dellenges and Ken Chow attended the Rapid Prototyping and Manufacturing Conference in May. The conference offered excellent exposure to the rapid prototyping and manufacturing areas, and opportunities for contacts to develop collaborations in the field. There were a number of interesting topics at the conference, including some new technologies that may change the landscape during the next year. You can view a complete trip report at [http://www-eng.lbl.gov/~dw/groupshare/docs/RP&M\\_trip\\_report.htm](http://www-eng.lbl.gov/~dw/groupshare/docs/RP&M_trip_report.htm).
- Ken Chow and Mark Scheeff attended the Molecular Foundry workshop at LBNL. The workshop offered a comprehensive status report on the development of the Molecular Foundry program. Workshop talks ranged from directions in nanoscience to theory, nanofabrication, and biological nanotechnology. There were also discussions about the “sister” nanoscience centers at Los Alamos, Sandia and Oak Ridge National Lab. You can view a complete workshop report at [http://www-eng.lbl.gov/~dw/groupshare/docs/molecular\\_foundry\\_workshop\\_report.htm](http://www-eng.lbl.gov/~dw/groupshare/docs/molecular_foundry_workshop_report.htm).
- Ken Chow and Mark Scheeff attended the Sensors Conference in San Jose. One of the major focus areas was microelectromechanical systems (MEMS) sensors. The talks covered a wide range of topics including microsystems roadmaps, nanotechnology, microfluidics, and commercialization issues. You can read Mark’s report on MEMS at the Sensors Conference at [http://www-eng.lbl.gov/~dw/groupshare/docs/sensors\\_mems\\_2002\\_report.htm](http://www-eng.lbl.gov/~dw/groupshare/docs/sensors_mems_2002_report.htm).
- Ken Chow attended the “Berkeley in Silicon Valley” Seminar in San Jose hosted by UC Berkeley. The faculty presentations included talks on biotechnology, the Center for Information Technology Research in the Interest of Society (CITRIS), and nanotechnology. The nanotechnology talks were given by Alex Zettl, Arun

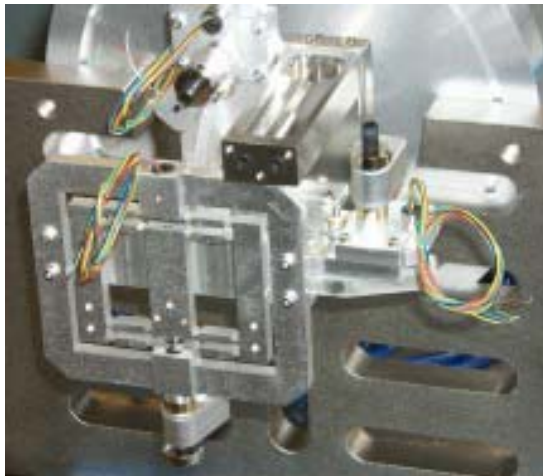
Majumdar, and K. Birgitta Whaley (Zettl and Majumdar have co-appointments at UC Berkeley and LBNL Material Sciences). The keynote speaker was Joe Costello, who gave an inspiring talk on effective qualities of entrepreneurs. The event was a great networking opportunity with professors from UC Berkeley. Some information on this year's presentations can be found at <http://www.cchem.berkeley.edu/editor/Publications/news/spring2002/bisv.htm>.

## Technical Integration Group

– Jim O'Neill

### Accomplishments

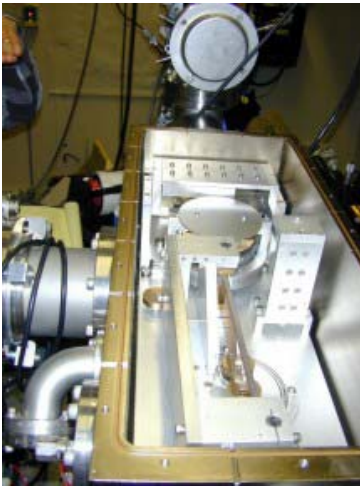
- The design of an infrared (IR) chamber for EETD is progressing; we have selected the vendor and the purchase order has been submitted. Specifications for the fans and cooling system will be finalized soon.
- The Advanced Light Source (ALS) Beamline 10.3.2 monochromator was installed and it worked well.



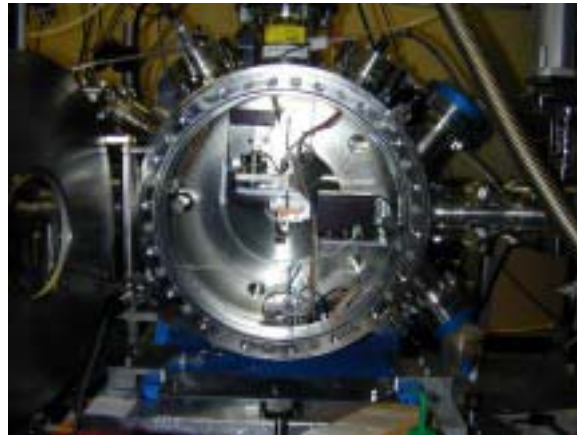
Upgrades to the Double Crystal Monochromator for ALS Beamline 10.3.2



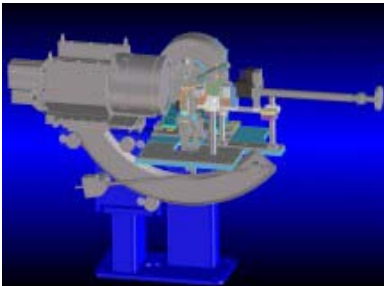
- Modifications on Beamline 5.3.1 have been completed and are being tested.



ALS Beamline 5.3.1 before minor modification to adapt different gratings and increase the diffraction angle range.



ALS Beamline 5.3.1 monochromator before minor upgrade to motorize shutter mounts.

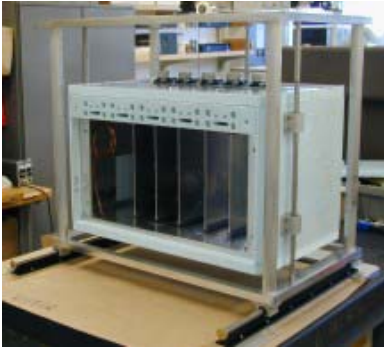


ALS Beamline 11.3.1 upgrades were designed and fabricated with members of the ALS Beamline Group.

- The Beamline 11.3.1 upgrade is complete except for minor modifications.
- We became involved with Silicon Vertex Tracker (SVT) work in June and are currently preparing tooling and fixtures. The removal

of the SVT from the center of the detector and beam pipe at the Stanford Linear Accelerator (SLAC) will take place in July. Reinstallation is scheduled for August or September.

- A cold box was built in June for the A Toroidal LHC ApparatuS (ATLAS) project. The pixel test chamber will be used at the European Laboratory for Particle Physics at CERN.



ATLAS pixel test chamber was designed and fabricated with members of the Physics Division.

- Projects and customers such as Supernova Acceleration Probe (SNAP), the Joint Genome Institute (JGI), Ridge Filter, Ion Beam Technology (IBT), National Center for Electron Microscopy (NCEM), and others continue to have ongoing technical needs.

- Our new machine center is installed, and will soon be operational.
- The 50-Kip Material Test System (MTS) is installed and is being checked out.
- Our gas-analysis system is installed, and outgas tests for the SNAP Charged-Couple Devices (CCD) are in progress.

### Issues

Two of our staff members left last month to take positions at LLNL. We are a little short-handed at the moment and are doing our best to be responsive. We hope to open some new positions within our group to address the situation.

### Planned Actions

The shop floor plan should be finalized soon and training on the new Brown and Sharp Coordinate Measuring Machine (CMM) [*Significant Events Report* ([April 2002](#))] should take place during the next quarter. We hope to finish our selection of computer-aided manufacturing (CAM) software and get our Computer Numerical Controlled (CNC) machines linked to workstations. Obtaining a CNC lathe suitable for our research and development prototype environment is still on the list.



## Organization

### Engineering Science

– Bill Edwards

#### *Bio-Instrumentation*

– Jian Jin

Several members of the Engineering Science Departments Bioinstrumentation Group won a prestigious R&D 100 award for the Crystallization Robot. See news story above.

#### *Joint Genome Institute (JGI)*

– Marty Pollard

We recently hired Steven Wilson, a Bioengineering graduate from UC Berkeley. He will be working at the JGI, programming and maintaining robots and equipment in the sequencing production line.

#### *Semiconductor Detector Group*

– Paul Luke

Craig Tindall and Dragos (Ionel) Hau have successfully developed and tested new types of electrical contacts for lithium-drifted silicon detectors. These contacts, based on the use of boron implantation and amorphous-silicon thin films, are much easier to segment than conventional contacts. This makes it possible to produce large double-sided strip detectors from lithium-drifted silicon. These detectors are being developed for use in Compton telescopes to image terrestrial and astronomical gamma-ray sources. Craig and Ionel presented separate papers on their work at the Symposium on Radiation Measurements and Applications, Ann Arbor, Michigan, May 21-23.

On a related note, Ionel completed his master's thesis work with us and graduated from UC Berkeley. He is now working at LLNL and plans to go on and complete his Ph.D.



## Design & Fabrication

– Lowell Koht

### *New Entrance and Project Planning Office*

We have completed the consolidation of the Planning and Estimating & Liaison groups into a single Project Planning Office. There is a direct entrance off of Glaser Road. This office should be considered the starting point for all fabrication work. Everyone in the office will be happy to help with project planning, whether the work is to be performed in-house, by outside vendors, or a combination. Staff will make every attempt to help route the work in an expedient fashion that best suits customer needs. Contact Al Salazar, Chip Hollister, Guy Pulsifer, John Mehren, Rich Meyer, or Tom West in Room 220; other experts can quickly be brought in to help on an as-needed basis.



### *Project Planning*

In addition to the organizational consolidation, several new capabilities have also been added to the area:

- An improved interface to the Shop Drop (<http://engcad9.lbl.gov/dfd/shopdrop/>).



- Electronic viewing software was installed, so additions or corrections to drawings can be made to virtually any file format expeditiously.
- A computer-aided design/computer-aided manufacturing (CAD/CAM) room where anyone can view, modify, or create solid models. In addition, there are 10 workstations on the machine shop floor that can access

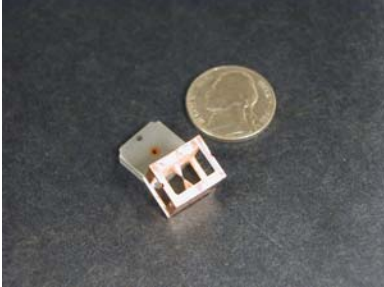
CAD/CAM software.

- Improved night coverage – rapid-response machining for “emergency” work until 11 p.m.

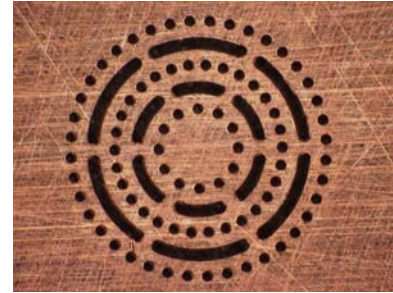


### *New Makino KE55 CNC Mills*

Building 77's machinery upgrade continued with the addition of two new precision tool-room CNC Makino KE-55 mills. These are in addition to the Roku-Roku (a high-speed machining center). The Makinos feature a 6,000-rpm, 7.5-hp spindle for machining a wide range of materials.



Electrode with 125-micron-diameter opposing tips with a 125-micron gap.



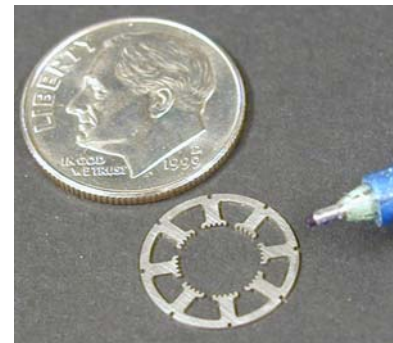
Micro-array with 125 micron holes and slots.

These devices have a 550 x 320 x 350-mm (21.6 x 12.6 x 13.8") X-Y-Z machining volume and can handle parts weighing up to 250 kg (550 lbs.). Maximum traverse rate is 470 ipm along the X and Y-axes and 197 in the Z direction.

The Roku-Roku is capable of drilling holes down to 40 microns and milling slots down to 100 microns wide. Efforts are under way to show practical use of milling tools down to 25 microns.

### *Micro Stepper Motor Stator Lamination*

As part of a technology transfer assistance grant, the Roku-Roku machine is being used to produce test laminates for Empire Magnetics, for a micro stepper motor. Each laminate is 350 microns thick. The inside teeth are 170 microns. A 100-micron end mill was used to machine the profiles.



Each laminate is 350 microns thick. The inside teeth are 170 microns. A 100-micron end mill was used to machine the profiles.

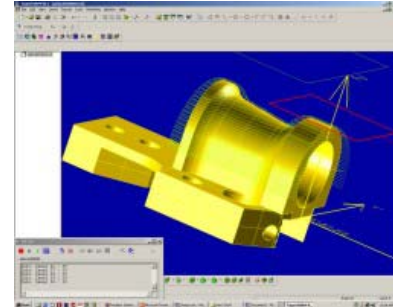
Alexander Zholents from the Accelerator Fusion Research Division (AFRD) applied a 10-kV square-shaped electric pulse with a duration of 10 nanoseconds to electrodes (after first pouring epoxy around the electrode assembly). This corresponds to a  $\sim 100$  MV/m electric field in a gap between the electrodes spaced at  $\sim 100$  microns. No electric breakdown was observed. The existing high-voltage generator limited the maximum



voltage. However, 100 MV/m is already about 30 times larger than a typical breakdown field in the air. In a few months, Alexander expects to have a generator capable of 70-kV and 1-ns pulses, and he will test future samples at this voltage.

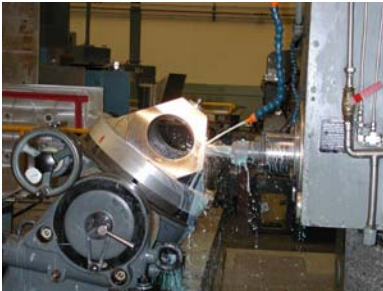
### *New CAD-CAM Software*

Machinists are now being trained on CAD-CAM software. Ten workstations with access to the software have been installed in the Building 77 shops. The addition of a new shop drop page (<http://engcad9.lbl.gov/dfd/shopdrop/>) will permit easier transmission from engineering directly to the shop floor.



New CAD-CAM Software

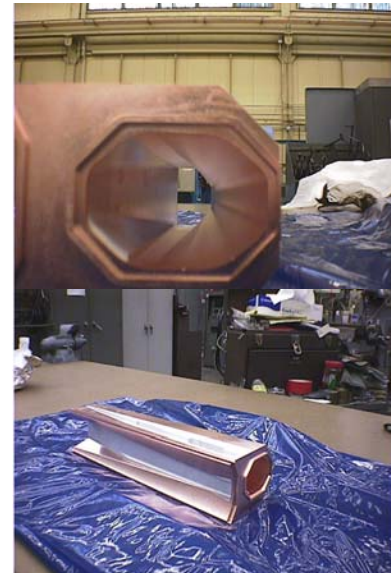
### *Completion of the Vector Magnetometer for ALS*



We finished machining the component pictured at left for the Vector Magnetometer (VMM) End Station on the 450 NC mill. Machinists John Haugrud, Manuel Pereira, and Kit Mui were involved in the machining of the two yokes, and Tom Perry and Dave Paulson were involved in the machining of the eight poles. This work was done in collaboration with Soren Prestemon and Jason Akre.

### *Two Chambers Completed for SLAC*

The Next Linear Collider Test Accelerator (NLCTA) Division of SLAC requested some Wire Electric Discharge Machine (EDM) work that was out of their machining scope but within ours. The copper chamber is 16.5-inches long, and required some tight tolerances and an intricate shape in the bore. We successfully completed the job ahead of their time schedule.







### *Sheet Metal & Welding*

Clean up and organization efforts have been underway in the Sheet Metal and Welding shops. The pictures below show examples of past and present looks for the Sheet Metal Shop.



Before



Before



After



After

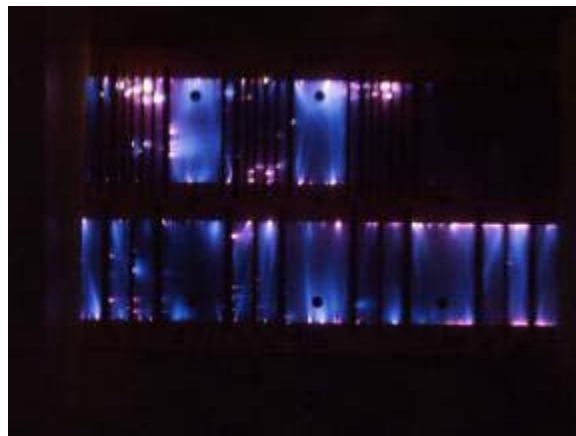
### *R&D Fabrication Unit*

The recently formed R&D Fabrication Unit is dedicated to providing sheet metal and welding fabrication services to scientific projects; the unit does not perform site support work. This allows the members of the unit to concentrate resources in support of science rather than facilities. All sheet metal and welding fabrication work should be directed to this group rather than to the Facilities Department Work Request Center.

Unit contacts are Bob Conroy, Manuel Gonzalez, and Tim Williams.

## *Vacuum Coating*

The discovery of bright organic electroluminescent diodes [*Significant Events Report* ([April 2002](#))] has stimulated intense research to understand the physics and chemistry of electron transport and recombination. In the simplest case, we have recently successfully tested working devices comprised of an aluminum cathode and an Indium Tin Oxide/glass combination anode containing a sandwich of an organic electron-emitting layer and a polymer-hole transport layer. These Organic Light-Emitting Diodes are tested in an inert helium or argon atmosphere, preventing oxidation of the sensitive diode components. This work is being done in conjunction with John Kerr's Advanced Environmental Energy Group in Building 62.



Vacuum Coating is devising methods of controlling carbon-nanotube growth density and vertical alignment on a heated catalytic substrate using Chemical Vapor Deposition enhanced by DC glow-discharge plasma and by radio-frequency (RF) discharge plasma. DC and RF plasmas ionize ammonia etchant gas, preparing catalytic surfaces for controlled nanotube synthesis. Plasma also breaks down carbon source gas into carbon precursors. Both of these attributes of plasmas vastly improve nanotube growth conditions and growth times.





### *Large Assembly Facility*

The Assembly Shop, which had vacated its Building 77 spaces during retrofit work, is now moving operations from their temporary home in Building 77A back into 77-141. This move is going smoothly and is expected to be largely complete by the end of July.



Before



After

### **Technology Transfer and Industrial & Energy Partnerships**

– Deb Hopkins

- Engineering's Tech Transfer and Industrial & Energy Partnerships Group welcomes six students and two teachers for the summer. As described in different subsections below, these students and teachers are working with group members on a variety of projects, including building a finite-element model of a nine-story building, analyzing data collected during a full-scale field test in an open-pit copper mine, constructing algorithms to manage a wireless-sensor network, and repairing an industrial robot.
- Bart Davis attended the NIST Advanced Technology Program proposer's conference in San Jose on May 8th. Bart gathered useful information for prospective proposers that is not otherwise easily obtained. If you are interested in the program, please talk to Bart.
- Bart Davis and Nuclear Sciences Division's Rick Firestone submitted a two-page white paper and quad chart entitled "Rapid Analysis of Multi-Component Gamma-Ray Spectra with Neural Networks" to the DOE Office of Nonproliferation Research and Engineering. The goal of the proposed project is to develop neural-networks software to automate interpretation of the spectrum from germanium gamma-ray detectors, and improve the speed and accuracy of materials identification using radiation-detection and neutron-interrogation systems.



- Deb Hopkins made a presentation with Dan Gilbert of Hewlett Packard to the California Seismic Safety Commission entitled “Enabling Technologies for Seismic Safety Applications.” Along with members of the commission, Deb and Dan toured the Powell Structural Research Laboratories at the University of California, San Diego (UCSD). The UCSD facilities include a shake table and unique assemblies that allow large- and full-scale testing of structures. Deb spent the following day at Hewlett Packard discussing opportunities for collaborative research and development.
- A pre-proposal quad chart to develop a “Cargo Container Instrumentation and Wireless Monitoring Network” was submitted in response to a Technical Support Working Group Broad Agency Announcement in early April.

### *Hazard Mitigation*

– Murat Karaca

In a collaborative project with the City of Berkeley, Evergreen Valley College’s Professor John Yu, and his students, LaMont Dukes and Fai Jor are developing a finite-element analysis to study the response of a nine-story apartment building in Berkeley to seismic loads. The long-term goal of the project is to install wireless sensors at key locations in the building to monitor acceleration during earthquakes (see story below under Wireless Sensors). Professor Yu and his students came to LBNL through the Faculty and Student Teams (FaST) Program, a partnership between the Department of Energy and the National Science Foundation coordinated on site by LBNL’s Center for Science and Engineering Education.



LaMont Dukes, Fai Jor, and Professor John Yu  
Examining Dana Street Building Blueprints

Murat Karaca attended several meetings with state and local agencies working on hazard mitigation. He will be a member of the organizing committee for the Office of Emergency Services’ conference on Fires, Floods, and Faults and Disaster Resistant California to be held in April 2003.

Members of the group joined Murat on visits to local agencies to discuss technologies that might reduce hazards or improve emergency response. Innovations and concepts under discussion include equipping robots with: high-bandwidth wireless digital communications and multiple digital video cameras, two-way audio communication and a multi-channel data-acquisition system to support a variety of sensors and detectors, and



a manipulator with an adjustable-claw gripper attached to a quick-disconnect interface, which would allow the use of many different tools.

### *Robotics Collaboration*

– Deb Hopkins

Engineering was asked to present its collaboration with the Castlemont and Arroyo High Schools' Robotics Club at the DOE Berkeley Lab on-site review on June 18<sup>th</sup>. The presentation was part of a poster session describing LBNL's educational outreach. Castlemont teachers Erin Carlson and Kenneth Mason, along with three Castlemont students with the robot they built to compete in the western regional FIRST competition [*Significant Events Report* ([April 2002](#))], were on hand to discuss the program with DOE reviewers and LBNL participants.

Castlemont High School teacher, Kenneth Mason, and students, Jesus De Haro and Ruben Oliva, are continuing their collaboration with Engineering Division this summer [*Significant Events Report* ([April 2002](#))]. Kenneth is working on development of a robotics curriculum, and the students are working on repairing a robot loaned to the group by the UC Police Department. Once the robot is operational, the students will develop enhancements to improve its ease of use and provide added functionality. You may see Ruben and Jesus looking for usable parts and supplies in salvage bins around the hill. If you have any parts, motors, batteries, power supplies, electronics, or tools headed to salvage that you think might be of use to them this summer, please let us know.



Castlemont High School students, Jesus De Haro and Ruben Oliva, and UC Berkeley student, Mehdi Malek-Ahmadi (right to left), repairing a UC Police Department robot used to identify and retrieve suspicious objects.

### *Wireless Sensors*

– Bart Davis and Erick Herrarte

As a result of meetings held during the last quarter, an LDRD proposal entitled "Engineering to Enable Emerging Wireless-Sensor Technologies for Large-Scale Applications" was submitted in response to the current call for proposals. The proposal includes Phil Datte, Earth Sciences Division's Kurt Nihei, Hewlett-Packard San Diego, the City of Berkeley, and the California Seismic Safety Commission. The purpose of the proposed research is to integrate emerging power, communications, software, and data technologies for successful applications of wireless sensor networks, and to test and demonstrate such a network in a building seismic-monitoring application.



Matthew Nielsen examining the wireless sensors.

Matthew Nielsen, a recent graduate in physics from Ripon College in Wisconsin, is working at LBNL this summer to develop algorithms to manage a wireless-sensor network. Matthew comes us through DOE's Energy Research Undergraduate Laboratory Fellowship Program. LBNL's participation is coordinated by the Center for Science and Engineering Education.

### *Mining*

– Murat Karaca and Deb Hopkins

Engineering's on-going mining project and the commercialization potential of technologies under development.

Attorneys representing the gold mining industry visited LBNL to discuss



UC Berkeley student, Louis-Philippe Semeteys-Ladouceur, is analyzing data collected in March during a full-scale field test at an open-pit copper mine in southeastern Arizona [*Significant Events Report* ([April 2002](#))]. The tests were conducted with Ramsey Haught of the Earth Sciences Division, and partners from the University of Arizona, Split Engineering, and

Phelps Dodge Mining Company. Dust samples were collected during drilling of blast holes, and drill-stem vibration was monitored with a specially designed collar housing accelerometers. Cross-hole radar measurements, down-hole video images, fracture maps, blasting parameters, and post-blast fragmentation data were also collected. A paper describing the most recent results was presented at the 2002 North American Rock Mechanics Symposium in Toronto in July.





## *Nondestructive Evaluation*

– Daniel Türler and Fred Reverdy

Fred Reverdy and Deb Hopkins visited the Ford Motor Company's Wayne Stamping and Assembly Plant in Detroit to observe the production line and spot-weld inspection procedures. On the same trip, they visited the Edison Welding Institute (EWI) in Columbus, Ohio. EWI has expertise in all aspects of welding and joining. In partnership with EWI, a proposal was submitted to a consortium of auto manufacturers to enhance spot-weld inspection systems.

Two paper offers were submitted to the Society of Automotive Engineers (SAE) for the 2003 World Congress in Detroit. One paper summarizes research to date using ultrasonic and thermographic methods to evaluate resistance spot welds. The second paper is an overview of research and demonstration projects related to vehicle thermal management using window and insulation technologies to reduce auxiliary loads and increase passenger comfort (see article below on vehicle retrofits).

New post-processing routines were developed to process fast-transient responses to thermal-pulse stimulation into maximum-phase and maximum-amplitude images. This technique is known as pulse-phase thermography (PPT). PPT is a promising technique for distinguishing stick welds from undersized and acceptable spot welds in galvanized steel. These state-of-the-art analysis tools enhance the nondestructive testing capabilities of our group and the Division.

## *Vehicle Retrofit*

–Daniel Türler

Daniel Türler submitted a final report on Gas-Filled Panel (GFP) retrofit work performed for the Ford Motor Company. This report summarizes the results of performance testing at the National Renewable Energy Laboratory [*Significant Events Report* ([October, 2001](#))]. GFP thermal insulation was designed, fabricated, and installed in the headliner area of a Lincoln Navigator. In a collaborative effort with EETD's Howdy Goudey of the Infrared Thermography Lab, the panels were produced and installed on site near Denver. Immediately after the panels were installed, the vehicles were tested in an outdoor setting to evaluate the effect of the panels on vehicle warm-up behavior and maximum interior temperatures reached under soak conditions. Data analyses and vehicle modeling just completed show that the headliner insulation significantly influenced warm-up times as well as maximum interior temperature when the vehicle was parked in the sun. To date, the Engineering Division has completed two projects for industry to retrofit vehicles with GFP thermal insulation. Our current goal is to expand these research activities by finding funding for the experiments necessary to fully quantify the benefits of the technology for vehicle applications.





## **Electronics Engineering**

– Peter Denes

### *ALS Electronics*

– Walter Barry

Harry Scheid, an Electronics Engineering Associate with 15 years of service at LBNL, died in May. Harry's many contributions are described in the Profile section above. We will all miss him.

## **Accomplishments**

- Higher-order-mode dampers for the storage ring main cavities have been successfully commissioned. Benefits of the dampers include longitudinal beam stability throughout the temperature tuning range of the cavities, and a higher recovery threshold (over 200mA) for the longitudinal coupled-bunch feedback system.
- During the shutdown, a swap-out and recalibration of ~50 IP boards was performed. Trim digital to analog conversion (DAC) junction cards that provide 20-bit resolution for power supply control were also successfully commissioned.
- Satisfactory power supplies for individually powering skew quadrupoles have been identified. Two have been procured for in-house testing.
- Link errors on the longitudinal-feedback system were traced to power supply problems and solved.
- The regulation of the storage ring high-voltage klystron power supply has been improved to prevent saturation of the klystron with the efficiency loop closed.
- A cold model of a third-harmonic cavity higher-order-mode (HOM) damper has been fabricated and prepared for testing.
- Initial tests of gating the tune drive signal for the two-bunch cleaning process indicate that a possible 3-5 dB improvement in satellite bunch cleaning might be obtained.
- Studies into noise and drifting of several beam-position monitors in the storage ring are commencing.

## **Issues**

- Because of the retirement of several Electronics Engineering staff in the area of personnel and radiation-safety interlock-system design, Bob Mueller has moved to Building 46 to take over design responsibilities for these systems. Bob will continue



to help oversee electrical safety on the experimental floor. He will also continue to be the contact for experimental apparatus inspection. Bob Benjegerdes will be assisting with electrical safety and equipment inspections.

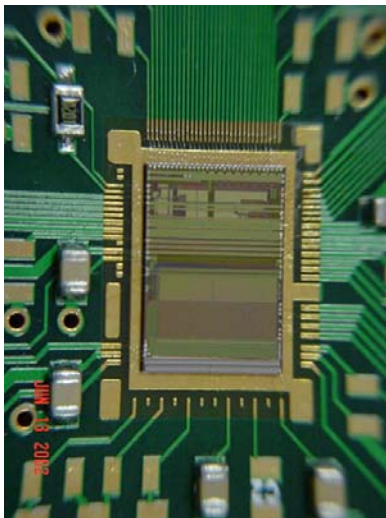
- Congratulations to two long-time members of the ALS family, Al Lindner and Art Ritchie, on their retirements. Al's last day was in April and Art's was in June. It's been a pleasure to work with Art and Al, both major contributors to the success of the ALS.
- The ALS EE group has a new Engineering Associate, Pete Cull. Pete came to us from the SNS and will initially be working on beamline EPS systems.
- The ALS EE group welcomes two summer students, Zach Oberman and Shamim Samadi.

### Planned Actions

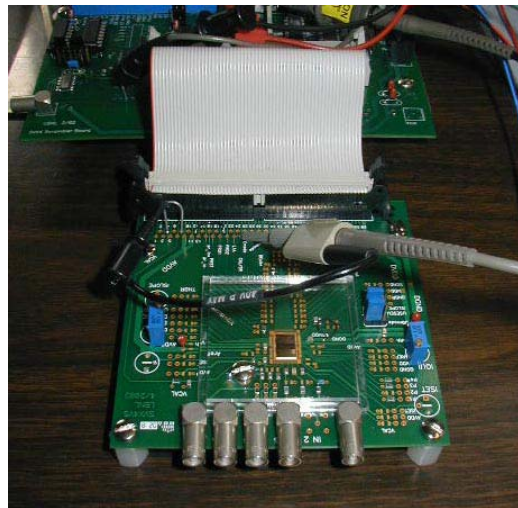
We are addressing our current shortage in Engineering Associates.

### *SVX4 Success* – Henrik von der Lippe

In June, we received the SVX4 Integrated Circuit (IC) [*Significant Events Report* [April 2002](#)] from fabrication. This is a 128-channel readout circuit for silicon strip detectors. Each channel consists of a preamplifier, analog pipeline, and AC/DC converter. The IC will be used in the next upgrade of the Collider Detector at Fermilab and D0 experiments at the Tevatron Collider at the Fermi National Accelerator Laboratory (FNAL).



The SVX4 IC in the test fixture.



Test Setup for the SVX4 IC



The design team, lead by Brad Krieger, has tested the circuit. The IC works as expected and meets all requirements. The next step is to assemble and test their modules, which is critical for their scheduled run2b upgrade.

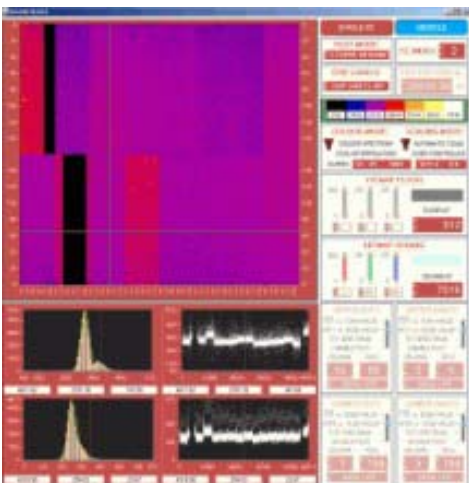
### *FE-I*

FE-I is the front-end chip for the ATLAS pixel detector in its deep submicron version. It was submitted in November 2001 using a commercial 0.25- $\mu$  complimentary metal oxide semiconductor (CMOS) process and received in early 2002. It is made up of 2,880 detection elements arranged into 18 columns of 160 channels, accounting for almost three million transistors. The pixel size is 50  $\mu$ m X 400  $\mu$ m, including the analog cell and a local slow control and readout circuitry aimed at transporting data to a pool of 9 X 64 end-of-column buffers located at the bottom edge of the chip.



FE-I is fully operational, and extensive lab evaluations, along with irradiation and test beam measurements, demonstrate that it essentially meets every requirement for the ATLAS pixel detector. Only minor improvements are necessary before the pre-production engineering run scheduled for November 2002.

Two bare FE-I chips were irradiated at the LBNL 88-Inch cyclotron and were almost unaffected after radiation levels as high as 60 Mrad(SiO<sub>2</sub>). A set of eight assemblies, allowing for all possible permutations among sensor types, bump-bonding vendors, and front-end flavors, were irradiated up to 60 Mrad(SiO<sub>2</sub>) at the CERN PS irradiation facility. Those devices, along with non-irradiated assemblies, were subsequently tested in beam for evaluation purposes. A detection efficiency well above 99 percent was recorded.



Another very important milestone of the ATLAS pixel project is to complete construction, evaluation, and testing of prototype detector modules this year. Many modules have been constructed, and will be irradiated and tested in beam in the near future. An example of measurements carried out on the module at LBNL are shown at left. A threshold dispersion of 147 electrons after tuning, and a noise of 254 electrons were recorded (46,000 channels).



## **Advanced Light Source**

– Alan Paterson

### **Accomplishments**

Some 350 separate activities were successfully carried out during the ALS April shutdown. The entire ring and many beamline front ends were surveyed and aligned as needed, the superbend magnets were refurbished, an insertion device and new vacuum section were installed, a new chicane magnet was installed, a higher-order-mode damping system was added to the RF system, and diagnostic improvements were made.

A collaborative team has been formed with members of the Mechanical Engineering Group, the Experimental Systems Group, and the Accelerator Physics Group at the ALS. This team is studying all the options for building a femtosecond (fsec) slicing insertion-device beamline in Sector 6. Work is concentrating in three areas: 1) measurement of optical scattering from mirrors, 2) measurement of the energy kick of the beam, and 3) design of the necessary dispersion bump in the straight section. The aim of this work is to prepare for rapidly building a fsec x-ray source at the ALS when funding becomes available. This project has been identified along with one other as highest priority at the ALS by all our recent reviews, and by the ALS scientific advisory committee. In addition to enabling forefront scientific research in ultra-fast chemistry and physics, the project is also vital to firmly establishing the scientific case for a dedicated fsec linac-based x-ray source, currently being designed by a team headed by John Corlett and Alexander Zholents at the Center for Beam Physics. This will be an ALS-scale machine when built and will cost several hundred million dollars.

### **Insertion Device**

- Bill Gath, Dave Anderson, and Jim Dougherty of the Assembly Shop assembled the elliptically polarized undulator (EPU) on schedule. Magnetic characterization of this device was completed and this EPU was installed in Straight 11 of the storage ring during the April shutdown. This is the second of this type of device to be installed in the storage ring.
- Two new major projects, Structurally Integrated Biology for Life Sciences (SIBYLS) and the CALifornia High Pressure Science Observatory (CALIPSO), both of which have extremely aggressive schedules to meet customer needs, made significant progress during the past three months. Because the designs for the beamlines use many identical components, these projects are being engineered and managed by the same team of scientists and engineers. The customer for the SIBYLS Beamline is John Tainer of Scripps Institute. The team met with John during this quarter and good progress was made toward defining the detail specifications for the experimental end stations. The end stations will be used for Protein Crystallography and for Small-Angle Scattering. These projects are located on the Sector 12



Superbend. The buildout of this sector is now under way, and a mezzanine floor has been constructed to support a lot of the beamline control electronics.

- The West Coast Group, which includes JPL and Sandia Laboratories, has authorized the engineering of a new LIGA beamline at Sector 3 of the ALS. Funding for this new project was received in March. Nicholas Kelez, Tony Catalano, and Ray Low are working on this new facility, which is scheduled to begin operation after the ALS November 2002 shutdown. During this quarter, most of the components for the beamline front ends were ordered, and the beamline passed its design review. The new experimental hutch was installed in June, ahead of schedule.
- Progress was reported by the engineering team of Jim Comins, Mike Kritscher, and Lionel Bonifas, who are working on the new Tomography beamline for the ALS. A critical issue has been the need to develop low-temperature brazing of silicon-optical components. Successful bonding that meets the technical needs of strength and vacuum integrity has now been achieved using three alloys.
- During the April shutdown, all installed superbend magnets had their cryocooler cold heads removed and replaced with new units. This was the first scheduled refurbishment of these units, and will be a regular annual maintenance activity at the ALS.
- The Vector Magnetometer, engineered by Soren Prestemon for the Scientific Support Group, was successfully assembled, reached design magnetic field, and passed its vacuum qualification test. This instrument will be used to study the magnetic performance of materials.

## Issues

- Late delivery by vendor of critical optical components for the MES Project.
- On-schedule completion of the MES project by October 2002. The engineering of the experimental end station is on the critical path and dependent on the performance of outside groups not under the control of LBNL.
- The very aggressive schedule needs of the customers for the SIBYLS and High-Pressure (CALIPSO) Beamlines. A significant scope change is under consideration that affects the design of the end station for SIBYLS. This will require increased engineering effort on new designs. The original plan had been to use designs already developed for the Protein Crystallography beamlines.
- Operation of the ALS storage ring with two EPUs installed. Operational experience with the first EPU in Straight 4 has indicated that the stored beam is affected by EPU operation.



- Retirement of several key staff during the coming summer months. Replacements will need to be identified and trained.
- A very high work load anticipated for the ALS mechanical technologists during the months of August and September.
- Full-scope definition for the Sector 6 femtosecond beamline project.

### **Planned Actions**

- Job postings and interviews are underway.
- Regular meetings are being held, and detailed activities for all projects requiring mechanical technology effort are being identified to efficiently schedule summer installation and assembly work.
- Magnet studies of EPU performance are planned, and tests will be carried out on the next EPU, which has just started work in the main shops.

### **Software Engineering**

– *RP Singh*

#### *ALS Controls*

– *Alan Biocca*

Magnet power supply electronics were updated for 150 storage ring power supplies. The horizontal and vertical supply controls were upgraded for greater precision of control, and the QF and QD quad supplies were moved from the Intelligent Local Controller (ILC) to the I/O Controller (IOC). The analog control boards were cleaned and recalibrated to address some drift problems. New controls for the Scrapers (which were moved) and the new Chicanes were implemented, along with controls for the new Sector 11 elliptically polarizing undulator (EPU). This has been a busy month for Controls.

#### *Booster Applications Facility*

A team of four Brookhaven National Laboratory (BNL) personnel visited the LBNL team that is developing a control system for the Booster Applications Facility (BAF) at Brookhaven. The main reason for the visit was to kick off the process of transferring details of the system to Brookhaven personnel to make it possible for them to maintain this system once it has been delivered to BNL at the end of this calendar year, and installed and integrated with the BAF accelerator early next calendar year. The visit went well and will be followed by other similar visits before the end of this calendar year to complete the knowledge transfer.



## Spallation Neutron Source

— Alex Ratti

### Accomplishments

The SNS Front-End Injector (FEI) was completed on time and within budget. In the last three months, the MEBT was completely wired, commissioned, and tested to full specifications.

We completed the installation of the Medium Energy Beam Transport (MEBT) in March and started commissioning each subsystem in early April. In what has become a tradition, the beam made it to the end on the first shot.

We used the early beam to calibrate all diagnostic components and integrated the work done at the partner labs (Brookhaven and Los Alamos, with the help of the Oak Ridge staff) to have a reliable beam-instrumentation package. In the meantime, we put the finishing touches on the low-level RF system that were needed to control the rebuncher cavities. With these systems in place, the beam was optimized along the MEBT and physics commissioning was undertaken to verify all performance specs set in the acceptance criteria. Emittance measurements confirmed an excellent agreement (better

than 10%) with the predicted values. In this phase, we ran beams of 20-25 mA at a reduced duty factor, because the device that intercepts and measures the beam cannot absorb the full average power.



SNS on display at the DOE Lehman review.

higher duty factors, up to 3%. No system failures were reported. The systems even survived a small earthquake, which caused a few computers in the controls section to reboot, while the beam was still reaching the end of the line.



Once the beam was optimized, we ran an endurance test, which lasted one week. During this test, the injector failed only once, due to an external cooling channel that developed a leak. These tests were made at increasingly



Our last task was to optimize the beamline to reach high peak currents. We shutdown the beamline on May 31st after several hours of beam operations at 50 mA, a much higher value than the 38 mA design value.

The beamline was fully decommissioned and packed for shipping in the first two weeks of June. The RFQ and MEBT were in their final location in the SNS tunnel by June 21st. One last shipment is planned for July 10th to complete the transfer of the equipment to Oak Ridge.

A complete set of pictures portraying the move of the equipment and the SNS dedication ceremony can be found at the following links:

[http://www-library.lbl.gov/teid/tmPhoto/clients/26919\\_Gough\\_SNS/](http://www-library.lbl.gov/teid/tmPhoto/clients/26919_Gough_SNS/)  
[http://www-library.lbl.gov/teid/tmPhoto/clients/26739\\_Kolb\\_SNS/](http://www-library.lbl.gov/teid/tmPhoto/clients/26739_Kolb_SNS/)

The following URL points to a movie capturing the progress between June 2001 and June 2002, showing the assembly and disassembly of the entire SNS beamline. [http://www-eng.lbl.gov/~ajdemell/SNS\\_MEBT/Movies/SNS\\_FES\\_Assembly\\_6\\_01\\_to\\_6\\_02.mov](http://www-eng.lbl.gov/~ajdemell/SNS_MEBT/Movies/SNS_FES_Assembly_6_01_to_6_02.mov)

## Issues

The end of the SNS project also signaled the departure of several key contributors. Ron Yourd, Jim Greer and Dave Fong retired, while Steve Lewis, Bill Abraham and EH&S's Ken Barat left LBNL to join the NIF project at Livermore Lab. Carl Lionberger followed the equipment to Oak Ridge to temporarily join the SNS project there.

In the upcoming weeks, we will continue working on documentation, and we will support some of the installation efforts at Oak Ridge.



## Division Support

### Sponsored Research Administration

– Lisa Rebrovich

#### Accomplishments

- The FY02 estimated spend plan was \$7.1M. Funding received to date is \$8.3M.
- Sixty-two projects are open; 19 are newly funded projects.
- Twenty-eight proposals have been prepared to date, and several others are in the works.
- Fourteen proposals are pending.
- The institutional plan for FY01-FY07 was submitted to the Budget Office in April.
- The Director's Review for FY03 was completed in May.
- The June Management Report was prepared and submitted to the Budget Office along with an initial Management Report projection for FY03.
- Four strategic LDRDs were submitted. Additional strategic proposals were prepared and submitted through other divisions.
- Two non-strategic LDRDs were prepared.
- Five white papers and quad charts were prepared for the Office of Nonproliferation Research. We are hoping to hear back soon from DOE on which ones will be selected to write full proposals.
- Congratulations to Emanuele Mandelli for receiving an award from the Molecular Biology Consortium. This is a three-year project funded by the National Institutes of Health for \$338K. The scope of the work calls for developing a highly modular x-ray-sensitive area-detector system for macromolecular crystallography at synchrotron beamlines.
- Congratulations to Daryl Oshatz on receiving an award from DOE. This is a joint proposal funded by DOE and Empire Magnetics. DOE is also funding the Makeyev Design Bureau (MDB), in Russia. The Cooperative Research and Development Agreement (CRADA) with Empire Magnetics for \$100K should get funded in July. The DOE project has already been funded for \$405K. This is a two-year project. LBNL, in collaboration with MDB and Empire Magnetics, will develop an improved



design of a Vertical Axis Wind Turbine.

- Congratulations to Norm Madden on receiving an award from Smithsonian Astrophysics Observatory, for a project titled, “Microcalorimeters with Germanium Thermistors for High-Resolution Soft and Hard X-ray Astronomy.” This project received \$75K with an additional 225K of funding expected.
- Congratulations to Bob Minor for receiving an award from Indiana University. This is a six-month \$130K fabrication project in collaboration with his STAR project.
- Carl Lionberger will be working at Oak Ridge National Laboratory (ORNL) for the next two years on the SNS project. Carl is relocating to Brookhaven but will remain an LBNL employee. This is a Work For Others (WFO) offsite project. We wish Carl well.
- Some other small projects were also funded during the last quarter. Norm Salmon received \$4K from DOE, Al Salazar received \$4K from SLAC, and Craig Tindall received \$30K from NASA. Congratulations.

### **Planned Actions**

- In order to ensure that we spend as planned, Lisa plans to carefully analyze the budgeted vs. actual costs and forecast project spending as we near the end of the fiscal year.
- The Budget Office has changed its name to the Financial Analysis Group.

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